

View Reviews

Paper ID

355

Paper Title

SAF- BAGE: Salient Approach for Facial Soft-Biometric Classification - Age, Gender, and Facial Expression

Track Name

Second Round Submission

Reviewer #4

Questions

1. Paper Summary. What is the paper about? Please, be concise (2 to 3 sentences).

The authors use an off-the-shelf face detector and then make use of two networks. One to perform saliency detection which is then combined with the face image input with a 30% reweighting factor. The final network performs classification.

2. [Paper Strengths] Please discuss, justifying your comments with the appropriate level of details, the strengths of the paper (i.e. novelty, theoretical approach and/or technical correctness, adequate evaluation, clarity, etc).

The authors compare to other methods and they provide experiments with and without the use of the saliency map. They achieve consistent improvements and outperform several other techniques for similar tasks.

3. [Paper Weaknesses] Please discuss, justifying your comments with the appropriate level of details, the weaknesses of the paper (i.e. lack of novelty – given references to prior work-, lack of novelty, technical errors, or/and insufficient evaluation, etc). Note: If you think there is an error in the paper, please explain why it is an error.

It is surprising that a network can't learn where the salient features should be, I would presume that this is related to a lack of data. Perhaps future or further work could address this.

In the paper, it is not clear to me what happens to potentially over-exposed regions (through the multiplication with the saliency mask), it would be good to know if the authors clip these or pass them directly through their network.

4. Recommendation

Probably Accept

5. [Justification] Justify your recommendation based on the strengths and weaknesses. Please be considerate to the authors and provide constructive feedback.

The authors present an approach to exploit saliency and highlight its importance for soft biometrics.

Reviewer #5

Questions

1. Paper Summary. What is the paper about? Please, be concise (2 to 3 sentences).

The paper proposes a soft biometrics (age, gender, expression) classification framework consisting of a face detection module, a saliency prediction module and the classifier. The classifier (AlexNet architecture) is fine-tuned on images built as a weighted combination of the original rgb image and the saliency map.

2. [Paper Strengths] Please discuss, justifying your comments with the appropriate level of details, the strengths of the paper (i.e. novelty, theoretical approach and/or technical correctness, adequate evaluation, clarity, etc).

The proposed method is evaluated on two recent benchmark datasets and with respect to state-of-the-art approaches. Results demonstrate that the proposed image representation, which is the main contribution of the paper, is simple yet effective and gives interesting hints for exploring a straightforward use of saliency.

3. [Paper Weaknesses] Please discuss, justifying your comments with the appropriate level of details, the weaknesses of the paper (i.e. lack of novelty – given references to prior work-, lack of novelty, technical errors, or/and insufficient evaluation, etc). Note: If you think there is an error in the paper, please explain why it is an error.

The paper lacks of novelty; all the modules (detector, saliency, classifier) are taken as is and simply stacked; the real contribution and innovation consists in multiplying the saliency map with the face image to highlight the most discriminating face areas. I believe the sections of the paper dedicated to the description of the different modules is disproportionate with respect to the evaluation. Since the technical contribution is little, more emphasis should be given to the evaluation.

4. Recommendation

Borderline

5. [Justification] Justify your recommendation based on the strengths and weaknesses. Please be considerate to the authors and provide constructive feedback.

I believe the contribution of the paper, even if little, is still valuable and can be of interest for the community; on the other hand, the evaluation and discussion should have been extended in order to widely explore the implications of the proposed image representation.

Reviewer #6

Questions

1. Paper Summary. What is the paper about? Please, be concise (2 to 3 sentences).

In this paper, the authors studied the effect of saliency-based weighting of input images on age/gender/facial expression classification by adopting ML-Net, a saliency module, followed by fine tuning AlexNet with the weighted input images. The results show that by using saliency map to weight important parts in the input image, the network can focus on the highlighted parts and consequently the results are improved.

2. [Paper Strengths] Please discuss, justifying your comments with the appropriate level of details, the strengths of the paper (i.e. novelty, theoretical approach and/or technical correctness, adequate evaluation, clarity, etc).

The idea is interesting and the results show its positive effect on the three problems, namely gender, age, and facial expression recognition.

3. [Paper Weaknesses] Please discuss, justifying your comments with the appropriate level of details, the weaknesses of the paper (i.e. lack of novelty – given references to prior work-, lack of novelty, technical errors, or/and insufficient evaluation, etc). Note: If you think there is an error in the paper, please explain why it is an error.

Although the idea is interesting, there are important points should be considered:

Major points:

- The authors used the term human visual system referring to the saliency map. Since there is no saliency detection algorithm can 100% match the human visual system, it is better do not describe it as equivalent to the human visual system.

- Although the idea is simple, the strength of the proposed method is that it achieves good results (the authors stated that it "surpasses" the state-of-the-art). However, there are already published works outperform the proposed

work in terms of accuracy. For example, Deep Expectation of Real and Apparent Age from a Single Image Without Facial Landmarks (Published online 2016) achieves 64% accuracy on Adience benchmark for age estimation.

- Similar ideas of feeding the CNN or an SVM classifier the facial feature components instead of feeding the raw input image -- which do the same purpose of highlighting saliency parts -- did not be mentioned or compared against them. E.g., "Gender Classification by Combining Facial and Hair Information". Some of them achieve very close accuracy on gender classification task, e.g., "Deep Gender Classification based on AdaBoost-based Fusion of Isolated Facial Features and Foggy Faces".

- The motivation for using AlexNet is a weak reason, as there are more recent architectures outperforms AlexNet (line 437).

Minor points:

- The authors used capital letters for no reason (not an abbreviation or a method name), which I prefer to fix it. For example, line 117, 118, 164, 228.

- Typos, such as: didn't (line 511), Annotated faces in-the-wild (AFW) (line 339).

Recommendations:

- It is recommended including missing competitors in the comparisons and using other datasets such as (Groups, LFW) for gender recognition and AgeDB for age estimation.

4. Recommendation

Borderline

5. [Justification] Justify your recommendation based on the strengths and weaknesses. Please be considerate to the authors and provide constructive feedback.

The paper is interesting, but the mentioned points should be considered before being ready for publication.